Value Engineering/Risk Assessment Workshop

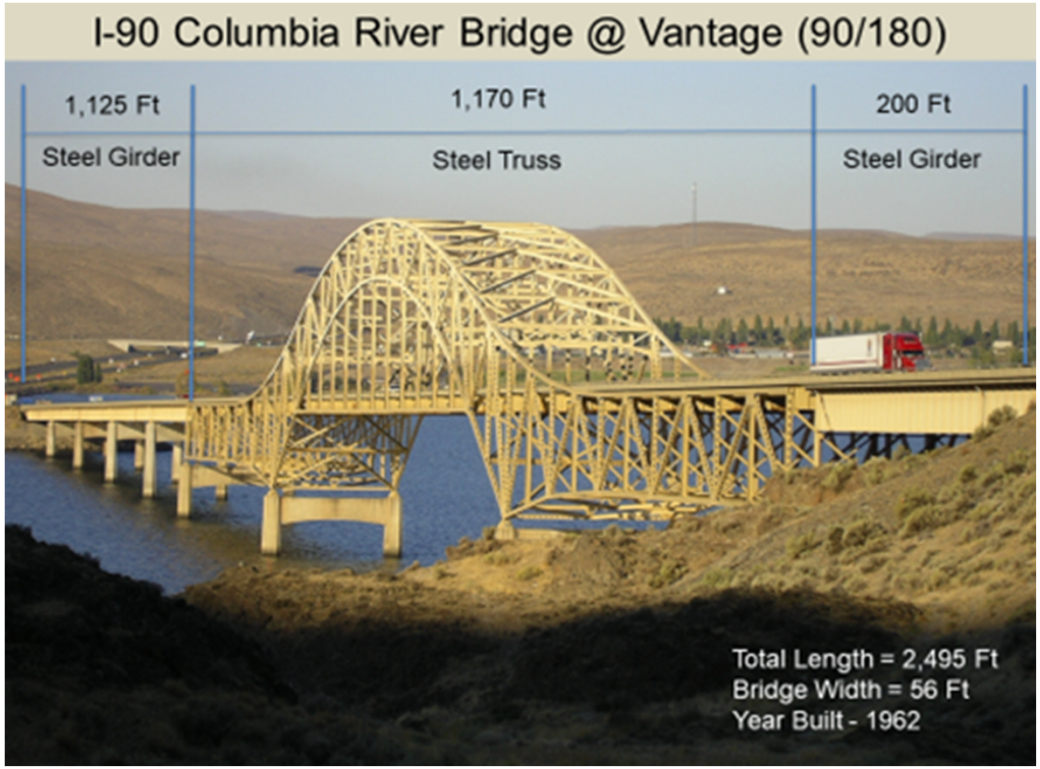
I-90 Vantage Bridge – Replace Deck and Special Repairs

Bob Hooker, WSDOT South Central Region Project Engineer

Thursday, January 6, 2022

PROJECT OVERVIEW

- Project Location
- Purpose and need
- Project Stakeholders
- Proposed build alternative
- Project schedule
- Environmental Documentation
- Right-of-Way (Staging Area)
- Constructability and Staging
- Challenges and constraints
- VE Goals



PURPOSE AND NEED

The purpose of this project is to remove and replace the existing bridge deck and repair select columns and struts.

- Preserve and maintain structural integrity
- Continue safe operation of the highway
- Extend the life of the bridge
- NCR Drainage Work

PROJECT LOCATION

Near by Land Use

- State Park
- Boat Ramp
- Businesses

Virtual Tour

https://kuula.co/share/NPwmf?logo=0&info=0&fs=1&vr=1&sd=1&initload=0&thumbs=1

PROJECT STAKEHOLDERS

- Community of Vantage
- Kittitas County
- Grant County
- The Gorge Amphitheatre
- Local Businesses and Agriculture
- State Parks/WDFW
- Wanapum Dam
- WSP
- Commercial Vehicle Services
- WSDOT – North Central Region
- WSDOT – South Central Region

EXISTING CONDITIONS

The bridge deck is showing signs of deterioration due to normal wear and age. The bridge experiences frequent blow outs creating holes in the deck which require emergency repairs.

EXISTING CONDITIONS

Maintenance work on Vantage Bridge.

EXISTING CONDITIONS

Some of the existing columns and struts are also deteriorating and in need of repair.

FUNDING

Project fully funded for design and construction

	Preliminary			Construction			
PIN	Federal	State	Total	Federal	State	Total	**Total**
509018V	$ 1,920,000	$ 80,000	$ 2,000,000	$ 31,474,366	$ 642,334	$ 32,116,700	**$ 34,116,700**
509017X	$ 372,825	$ 15,535	$ 388,360	$ 3,774,833	$ 77,037	$ 3,851,870	**$ 4,240,230**
							$ 38,356,930

PROJECT SCHEDULE

Project Definition Complete . . . . . February, 2021

Preliminary Engineering . . . . . April, 2021

Upcoming VERA Study . . . . . January, 2022

Environmental Doc Complete . . . . . July, 2022

Advertisement Date . . . . . October, 2022

Operationally Complete . . . . . November, 2025

PROPOSED BUILD ALTERNATIVE

The deck and bridge barrier will be replaced.

Possible Construction Techniques

PROPOSED BUILD ALTERNATIVE

Repair columns and struts.

ENVIRONMENTAL DOCUMENTATION AND ISSUES

- NEPA and SEPA Permits
- Coast Guard Permit
- Bird Nest Removal
- Asbestos Assessment
- HazMat Assessment

NEPA

CONSTRUCTABILITY AND STAGING

- Traffic Control Strategies
  - ✓ Reduce I-90 to 1 lane each direction - Multiple Seasons
  - ✓ Speed reduction and Smart Work Zone System (SWZS)
  - ✓ WSP Agreement
  - ✓ Multi-Regional Communication Coordination
- Stage project to maintain structural integrity
  - ✓ Limit area of deck removal
- Accelerate Schedule
  - ✓ Precast Panels
  - ✓ Reduce duration
  - ✓ Minimize Traffic Delay

Staging Area

PROJECT CHALLENGES

- Bridge lane reductions will cause traffic backups
- Available Detours add significant added travel distance and time.
- Deck removal could cause deflection in girders
- Communicating closures to traveling public
- Multi-Regional Communication effort
- Emergency Services
- Weather
- Adjacent Recreational Use

PREVIOUS BACKUP

	Light backups may occur because of activity, but none expected
	Backups - 15 minutes or less of added delay expected
	Backups - 30 minutes or less of added delay expected
	Backups - 60 minutes or less of added delay expected
	Backups - longer than 60 minutes of added delay expected

NC	NC means no counts are available for that time.
x	An x can be added to the Backup (Vehicles) sheet if a lane was open and it will carry forward to this sheet.

The PTR Recorder R042 on SR 090 at MP 136.59 was used for volumes.
No AADT correction was made for the difference between the PTR and the project location.
Data is based on counts from 2019 that have been projected to 2022.
A yearly growth rate of 1.7% was applied to the volumes for a total growth of 5.1%.
A 70 MPH speed limit was used.
A 23.01% truck percent and a passenger car equivilant (PCE) of 2 was used.
Construction vehicles will not be entering or exiting.
Capacity of lanes was reduced because total width will be less than 16 feet wide.
Capacity of lanes was reduced because lanes will be less than 12 feet wide.
A media blitz is not anticipated and therefore a reduction in traffic volume was not used.

PTR R042 on SR 090 at MP 136.59

- Additional Travel Time (Minutes)

Max Delay EB
Friday
- 9 Miles
- 4 Hours

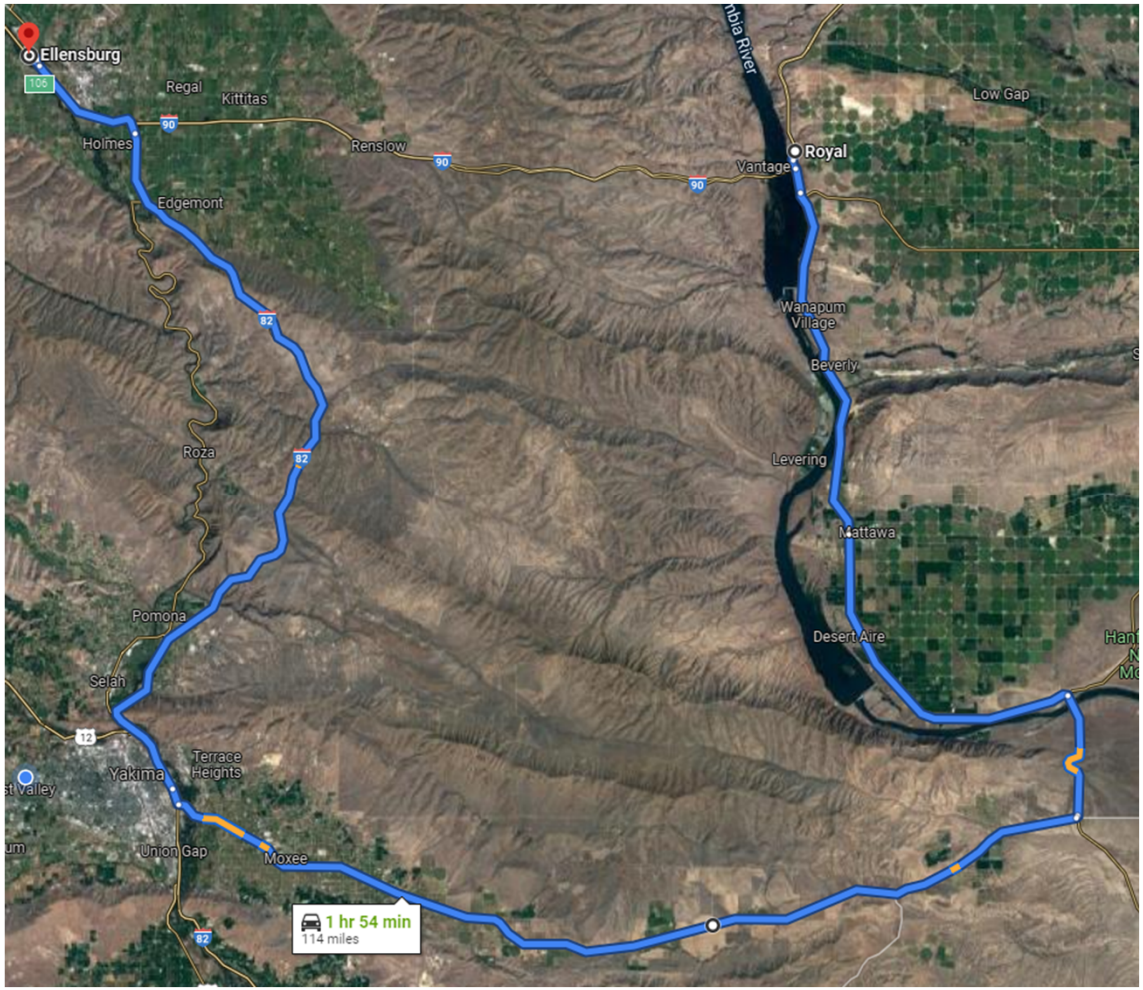
Max Delay WB
Sunday
- 11 Miles
- 5 Hours

Month	Day of mo	Day of wk	7-8	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12
Mar	17	Sun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mar	24	Sun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mar	31	Sun	0	0	0	0	0	0	0	10	15	15	10	0	0	0	0	0	0
Apr	07	Sun	0	0	0	0	0	0	5	10	10	10	0	0	0	0	0	0	0
Apr	14	Sun	0	0	0	0	0	10	30	55	70	80	70	50	15	0	0	0	0
Apr	21	Sun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apr	28	Sun	0	0	0	0	0	5	10	15	10	5	0	0	0	0	0	0	0
May	05	Sun	0	0	0	5	25	50	75	105	125	135	125	100	65	20	0	0	0
May	12	Sun	0	0	0	0	0	5	0	5	5	0	0	0	0	0	0	0	0
May	19	Sun	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0
May	26	Sun	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun	02	Sun	0	0	0	5	15	20	25	25	25	15	5	0	0	0	0	0	0
Jun	09	Sun	0	0	20	70	115	150	165	180	185	185	175	165	140	105	60	5	0
Jun	16	Sun	0	5	35	95	170	235	275	290	295	290	285	270	245	215	175	125	75
Jun	23	Sun	0	0	0	0	5	15	30	40	50	50	50	35	10	0	0	0	0
Jun	30	Sun	0	0	20	55	75	100	115	135	145	160	170	170	160	135	95	50	0
Jul	07	Sun	0	0	0	20	50	85	120	150	170	190	200	205	200	180	145	105	55
Jul	14	Sun	0	0	0	5	20	40	55	70	75	75	70	60	40	10	0	0	0
Jul	21	Sun	0	0	0	0	10	25	45	60	65	70	70	60	40	15	0	0	0
Jul	28	Sun	0	0	0	5	15	35	55	75	90	95	100	95	85	60	30	0	0
Aug	04	Sun	0	0	0	5	15	35	45	65	70	70	65	55	50	40	10	0	0
Aug	11	Sun	0	0	0	25	55	90	115	135	155	160	160	150	125	95	55	5	0
Aug	18	Sun	0	0	0	0	15	35	60	80	90	100	100	90	70	45	5	0	0
Aug	25	Sun	0	0	0	0	15	30	50	70	85	95	95	90	70	40	5	0	0
Sep	01	Sun	0	0	0	0	5	15	15	15	10	0	0	0	0	0	0	0	0
Sep	08	Sun	0	0	0	0	5	10	15	15	10	0	0	0	0	0	0	0	0
Sep	15	Sun	0	0	0	0	0	0	5	10	5	5	0	0	0	0	0	0	0

DETOUR THROUGH YAKIMA AND VERNITA BRIDGE

- Detour is 114 miles
- Normal route is 47 miles

- Max Delay time 5 hours
- Detour time 2 hours



DETOUR THROUGH WENATCHEE AND ODABASHIAN BRIDGE

- Detour – 110 Miles
- Normal Route – 47 Miles

- Max Delay time 5 hours
- Detour time 2 hours

COMMUNICATION STRATEGY

- ITS Coordination
  - ✓ VMS Boards
  - ✓ HAR
  - ✓ Smart Work Zone
    - ✓ Live Delay Times
- Public Outreach
  - ✓ Social Media
  - ✓ Press Release
  - ✓ WSDOT Website
  - ✓ Proactive Communication
  - ✓ Email/Text Alerts

Workshop Goals

- **Assess risks and opportunities**
  - **Accelerated Schedule**

- **Provide a recommendation on construction technique and maintenance of traffic.**

WSDOT

November 2021

I-90/VANTAGE BRIDGE - REPLACE DECK AND SPECIAL REPAIRS

I-90, MP 137.10 – MP 137.77

Project Description (PIN: 509018V, 509017X)

Bridge Deck Rehabilitation – Bridge # 90/180

The I-90 Columbia River Bridge at Vantage is showing signs of deterioration due to normal wear and age. The existing bridge deck, columns and struts are deteriorated and in need of repair. This project will remove and replace the existing bridge deck and repair select columns and struts to maintain structural integrity, continue safe operation of the highway, and extend the life of the bridge. ■ NCR I-90/East of Vantage – Drainage Improvement will also be included in this Work.

Project Location (I-90 Columbia River at Vantage)

Pavement: (Concrete)

- Travel Lanes: 4 x 12 ft. Lanes
- 4 ft. Median on the bridge

Pavement Thickness: Approx. 6.5 inches.

Existing Utilities:

- One Fiberoptic conduit crossing

Environmental:

- NEPA/SEPA Permits, Coast Gaurd

Anticipated Traffic Impacts:

MINOR MODERATE SIGNIFICANT

Staged construction of the bridge rehab will allow one lane in each direction to remain open (EB/WB). This will also allow the interchanges to remain functional. Coordinate with local businesses in Kittitas and Grant counties. Significant traffic impacts/backup are anticipated.

Project Contacts:

- **Project Engineer**: Bob Hooker, P.E.
- **Asst. Project Engineer:** Madie Scully, P.E.
- **Design Supervisor:** Mike Roediger, P.E.
- **Construction Office:** Scott Golbek, P.E.
- **Communications:** Summer Derrey

Project Data:

- R5 – Rural-Interstate (Terrain: Rolling)
- Posted Speed: 70 MPH
- Average Daily Traffic (ADT): 17,000
- Truck Percentage: 23%

Delivery Method TBD:

- WSDOT Region Office: South Central DPEO
- Counties: Kittitas & Grant
- Preservation Project: P2 (Structure)

Stakeholders:

Commercial Vehicle Services, WSP, local businesses, state parks, emergency response services, North Central Region, Gorge Amphitheatre, Vantage

Project Milestones:

D – Project Definition Complete	**Feb 2021**
B – Begin Preliminary Engineering	April 2021
E – Environmental Doc Complete	**July 2022**
A – Advertisement Date	Oct 2022
O – Operationally Complete	**Nov 2025**

Current Action Items

Preliminary Design:

- VERA Workshop
- Preliminary Alignments (Crossovers)
- Determine Traffic Control Configuration
- Prepare Preliminary Cost Estimate

Design Team Assumptions:

- *Work Zone Speed = TBD*
- *One lane open each way during construction*
- *Two to Three construction seasons=TBD*

Budget

Federal & State Funds Budget (Rounded):	Prelim Eng.	Construction	TOTAL
	$2,400,000	$35,900,000	$38,300,000

QUESTIONS?

Thank You